



# **BIM – Building Information Modeling Austrian standards and expected benefits for a motorway operator**

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- BIM - State of the art in ASFINAG
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## Group of companies

ASFINAG was founded in 1982 and is a company of the Republic of Austria



## ASFINAG in brief

- **Core tasks:** Planning, construction, maintenance, operation, funding and tolling of motorways and expressways in Austria
- **Road network:** 2.199 km
- **Employees:** approx. 2.650
- **Operation and maintenance facilities:** 43
- **Traffic management center:** 10 (1 national, 9 regional)
- **Financing:** Kfz  $\leq$  3,5 t: toll stickers + special tolls  
Kfz  $>$  3,5 t: mileage-dependant toll  
→ ASFINAG is not government-financed!

# ASFINAG – the Austrian motorway operator



## Key Figures

- Length of network: **2,199 km**
- Lane kilometres: approx. **11,600 km**
- Tunnels: **#163 (381 km)**
- Bridges: **5,166**
- Parking facilities: **240** (6,600 truck parking lots)
- Toll revenues: approx. **1,800 Mio. EUR**
- Infrastructure investments **+/- 1,000 Mio. EUR**
- Ongoing construction projects per anno: **450**

## Austrian BIM standards

07.2015 →

new Austrian standards for „Digital structure documentation“

ÖNORM A6241-1: Digital structure documentation  
Part 1: CAD data structures and building information  
modeling (BIM) — Level 2

ÖNORM A6241-2: Digital structure documentation  
Part 2: Building information modeling (BIM) — Level 3-iBIM

# ÖNORM A6241-1: Digital structure documentation — Part 1

- Definition of CAD data structures for BIM-Level 2
  - definitions for layers
  - definitions for blocks and attributes
  - coding for information data
  - headers for plans
  - coordinate systems
  - ...

State of play:

- defined for buildings such as houses
- not defined for structures such as bridges, tunnels, ...



# ÖNORM A6241-2: Digital structure documentation — Part 2

- Definition of project-models  
(basic-model: survey data - cadastre, architecture, structural planning, ...)
- Definition of Life-cycle of buildings  
(plan, design, construct, operate,...)
- Dimensions  
(3D, 4D - scheduling, 5D - estimating, 6D – facility management)
- Level of details
- IFC
- ASI-Merkmalsserver (<http://db.freebim.at/>)  
(web-based database for construction elements)

## Organisations - workgroups - BIM

- **ASI – Austrian Standards Institute**  
creating Austrian BIM-standards
- **ÖBV – Österreichische Bautechnikvereinigung**  
creating documents for practical use of BIM
- **ÖIAV - Österreichischer Ingenieur- und Architekten-Verein**  
implementing BIM into building processes

## **BIM – benefits in building process**

in general...

- Getting a higher level of planning reliability and cost certainty
- Timely identification of planning errors in building process
- Getting 3D-visualisations for marketing and public relations
- Getting structures data for maintenance and facility-management
- Getting connected digital data of structures for the whole life-cycle

## BIM – State of the art in Austria

- We have just started (2015) with Austrian – BIM - standards and to implement BIM in building processes
- We don't have much contractors, who are able to work with BIM
- Not enough BIM-coordinators available today
- For structures like tunnels, bridges, ... the BIM-CAD-Standards are not defined today

## BIM – State of the art in ASFINAG

- We have designed our object-based structure documentation and change continuously from paper-based to electronic document archives
- We are working on a central structure database
- We have now pilot projects using web-based collaboration-platforms for building projects
- We will start with BIM pilot projects this year, to see, how to deal with the new methods

## Changes required due to the use of BIM in ASFINAG

- Creating new ASFINAG-BIM-CAD-standards for infrastructure objects (bridges, tunnels, overhead gantries, ...) based on Austrian BIM-CAD-standards
- Establishing new web-based collaboration-platforms for ALL building-projects
- Setting up BIM-Servers for building-projects
- Establishing a central ASFINAG-database for all infrastructure objects

## Changes required due to the use of BIM in ASFINAG

- Creating ASFINAG - BIM-drawing libraries
- Establishing a BIM-Model – Management
- Redesigning construction tendering and contract regulations
- Connecting all different internal databases (GIS, SAP, ...)
- Redesigning our internal building process because of BIM-digitalisation



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***RELIABILITY ALL THE WAY.***